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Content	Mailroom Date	Entry Number	IDS Review	Reviewer

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Refine Search | Bayesian and diagnostic and case and cause

	PAT. NO.	Title
1	7,043,476	Method and apparatus for data mining to discover associations and covariances associated with data
2	7,043,348	Transient fault detection system and method
3	7,027,953	Method and system for diagnostics and prognostics of a mechanical system
4	7,026,623	Efficient single photon emission imaging
5	7,024,399	Computer architecture and process of patient generation, evolution, and simulation for computer based testing system using bayesian networks as a scripting language
6	7,023,979	Telephony control system with intelligent call routing
7	7,020,521	Methods and apparatus for detecting and/or monitoring heart failure
8	7,020,314	Black blood angiography method and apparatus
9	7,016,056	Authoring tool for bayesian network diagnostic systems
10	7,013,239	Apparatus and method for performance and fault data analysis
11	7,008,380	Automatic lung parameter estimator
12	7,006,881	Media recording device with remote graphic user interface
13	7,002,478	Smoke and flame detection
14	6,996,549	Computer-aided image analysis
15	6,996,478	Multiple sensing system and device
16	6,993,675	Method and system for monitoring problem resolution of a machine
17	6,993,378	Identification by analysis of physiometric variation
18	6,993,193	Method and system of object classification employing dimension reduction
19	6,983,266	Compliance monitoring for anomaly detection
20	6,982,842	Predictive disc drive failure methodology
21	6,981,423	System and method for sensing torque on a rotating shaft
22	6,978,244	Computer architecture and process of patient generation, evolution, and simulation for

computer based testing system

23 6,975,942 Underground utility detection system and method

24 6,975,899 Multi-modal optical tissue diagnostic system

25 6,970,560 Method and apparatus for impairment diagnosis in communication systems

26 6,960,570 Compositions and methods for the therapy and diagnosis of lung cancer

27 6,957,202 Model selection for decision support systems

28 6,955,648 Precision brain blood flow assessment remotely in real time using nanotechnology ultrasound

29 6,948,381 System and method for sensing torque on a rotating shaft

30 6,947,583 Histological reconstruction and automated image analysis

31 6,937,776 Method, system, and computer program product for computer-aided detection of nodules with three dimensional shape enhancement filters

32 6,936,476 Point of care diagnostic systems

33 6,934,748 Automated on-line experimentation to measure users behavior to treatment for a set of content elements

34 6,931,326 Methods for obtaining and using haplotype data

35 6,919,211 Polypeptide arrays

36 6,917,839 Surveillance system and method having an operating mode partitioned fault classification model

37 6,908,740 Methods and apparatus for gel-free qualitative and quantitative proteome analysis, and uses therefore

38 6,906,320 Mass spectrometry data analysis techniques

39 6,898,737 Automatic classification of event data

40 6,892,163 Surveillance system and method having an adaptive sequential probability fault detection test

41 6,882,990 Methods of identifying biological patterns using multiple data sets

42 6,879,973 Automated diagnosis of printer systems using bayesian networks

43 6,870,901 Design and architecture of an impairment diagnosis system for use in communications systems

44 6,868,358 Method for processing information in a tire pressure monitoring system

45 6,868,319 Diagnostic system and method

46 6,867,051 Point of care diagnostic systems

47 6,862,710 Internet navigation using soft hyperlinks

48 6,862,414 Automated banding defect analysis and repair for document processing systems

49 6,855,114 Automated method and system for the detection of abnormalities in sonographic images

50 6,852,488 Identifying a base in a nucleic acid

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	PAT. NO.	Title
51	6,850,252	Intelligent electronic appliance system and method
52	6,847,854	System and method for dynamic multi-objective optimization of machine selection, integration and utilization
53	6,842,638	Angiography method and apparatus
54	6,839,636	Multiple sensing system and device
55	6,834,256	Method and system for determining motor reliability
56	6,832,069	Latent property diagnosing procedure
57	6,826,486	Methods and apparatus for predicting pore and fracture pressures of a subsurface formation
58	6,820,072	Validation of probabilistic troubleshooters and diagnostic system
59	6,817,980	Automated diagnostic system and method including disease timeline
60	6,811,310	Methods and devices for analysis of X-ray images
61	6,810,312	Method for identifying a loss of utilization of mobile assets
62	6,795,808	User interface/entertainment device that simulates personal interaction and charges external database with relevant data
63	6,792,399	Combination forecasting using clusterization
64	6,789,091	Method and system for web-based analysis of drug adverse effects
65	6,789,069	Method for enhancing knowledge discovered from biological data using a learning machine
66	6,785,636	Fault diagnosis in a complex system, such as a nuclear plant, using probabilistic reasoning
67	6,782,345	Systems and methods for diagnosing electronic systems

68 6,772,374 Continuous language-based prediction and troubleshooting tool
69 6,767,325 Automated diagnostic system and method including synergies
70 6,764,447 Automated diagnostic system and method including alternative symptoms
71 6,760,715 Enhancing biological knowledge discovery using multiples support vector machines
72 6,760,401 Apparatus and method for processing of digital images
73 6,759,200 Thymidine phosphorylase gene sequence variances having utility in determining the treatment of disease
74 6,751,553 Utility mapping and data distribution system and method
75 6,746,399 Automated diagnostic system and method including encoding patient data
76 6,740,038 Systems and methods for assessing vascular effects of a treatment
77 6,737,514 Compositions and methods for the therapy and diagnosis of lung cancer
78 6,735,596 Computer method and user interface for decision analysis and for global system optimization
79 6,731,307 User interface/entertainment device that simulates personal interaction and responds to user's mental state and/or personality
80 6,730,027 Automated diagnostic system and method including multiple diagnostic modes
81 6,728,692 Apparatus for a multi-modal ontology engine
82 6,728,679 Self-updating user interface/entertainment device that simulates personal interaction
83 6,728,567 Method and apparatus for high-resolution detection and characterization of medical pathologies
84 6,723,051 Systems and methods for assessing vascular health
85 6,721,706 Environment-responsive user interface/entertainment device that simulates personal interaction
86 6,714,925 System for identifying patterns in biological data using a distributed network
87 6,708,165 Wide-spectrum information search engine
88 6,704,662 Technique for quantiating biological markers using quantum resonance interferometry
89 6,699,193 Decision support systems and methods for assessing vascular health
90 6,692,443 Systems and methods for investigating blood flow
91 6,691,249 Probabilistic diagnosis, in particular for embedded and remote applications
92 6,690,761 Methods and devices for analysis of X-ray images
93 6,687,685 Automated medical decision making utilizing bayesian network knowledge domain modeling
94 6,683,455 Methods for spectral analysis and their applications: spectral replacement
95 6,678,669 Method for selecting medical and biochemical diagnostic tests using neural network-related applications
96 6,673,908 Tumor necrosis factor receptor 2
97 6,667,394 Printing oligonucleotide arrays
98 6,665,652 Method of diagnosis of lyme disease
99 6,665,425 Systems and methods for automated image quality based diagnostics and remediation of document processing systems
100 6,664,062 Thymidylate synthase gene sequence variances having utility in determining the treatment of disease

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	PAT. NO.	Title
101	6,658,467	Provision of informational resources over an electronic network
102	6,658,395	Enhancing knowledge discovery from multiple data sets using multiple support vector machines
103	6,656,695	Biomap characterization of biologically active agents
104	6,656,122	Systems and methods for screening for adverse effects of a treatment
105	6,655,963	Methods and apparatus for predicting and selectively collecting preferences based on personality diagnosis
106	6,655,922	System and method for detecting and diagnosing pump cavitation
107	6,651,034	Apparatus and method for performance and fault data analysis
108	6,647,341	Methods for classifying samples and ascertaining previously unknown classes
109	6,641,532	Computerized medical diagnostic system utilizing list-based processing
110	6,640,145	Media recording device with packet data interface
111	6,636,623	Optical projection imaging system and method for automatically detecting cells with molecular marker compartmentalization associated with malignancy and disease
112	6,634,000	Analyzing fault logs and continuous data for diagnostics for a locomotive
113	6,633,861	Automatic invocation of computational resources without user intervention across a network
114	6,611,630	Method and apparatus for automatic shape characterization
115	6,611,206	Automatic system for monitoring independent person requiring occasional assistance
116	6,610,482	Support bound probes and methods of analysis using the same
117	6,609,523	Computer based business model for a statistical method for the diagnosis and treatment of BPPV

118 6,607,888 Method for analyzing nucleic acid reactions
119 6,606,615 Forecasting contest
120 6,601,055 Explanation generation system for a diagnosis support tool employing an inference system
121 6,599,912 Methods and compositions for modulating cell proliferation and cell death
122 6,591,257 Apparatus and method for a compositional decision support reasoning system
123 6,584,455 System and method for predicting design errors in integrated circuits
124 6,574,537 Diagnostic system and method
125 6,569,093 Automated diagnostic system and method including disease timeline
126 6,562,869 Nutritional supplement for increased energy and stamina
127 6,553,548 System and method for recovering from design errors in integrated circuits
128 6,553,356 Multi-view computer-assisted diagnosis
129 6,537,759 Folylpolyglutamate synthetase gene sequence variances having utility in determining the treatment of disease
130 6,535,865 Automated diagnosis of printer systems using Bayesian networks
131 6,531,315 Compositions and methods for the therapy and diagnosis of lung cancer
132 6,529,888 Generating improved belief networks
133 6,527,713 Automated diagnostic system and method including alternative symptoms
134 6,524,241 Automated diagnostic system and method including multiple diagnostic modes
135 6,519,355 Optical projection imaging system and method for automatically detecting cells having nuclear and cytoplasmic densitometric features associated with disease
136 6,510,406 Inverse inference engine for high performance web search
137 6,507,633 Method for statistically reconstructing a polyenergetic X-ray computed tomography image and image reconstructor apparatus utilizing the method
138 6,502,039 Mathematical analysis for the estimation of changes in the level of gene expression
139 6,496,713 Ferromagnetic foreign body detection with background canceling
140 6,493,637 Coincidence detection method, products and apparatus
141 6,480,814 Method for creating a network model of a dynamic system of interdependent variables from system observations
142 6,479,069 Nutritional supplement for increased energy and stamina
143 6,475,143 Automated diagnostic system and method including encoding patient data
144 6,473,084 Prediction input
145 6,468,210 Automated diagnostic system and method including synergies
146 6,466,687 Method and apparatus for analyzing CT images to determine the presence of pulmonary tissue pathology
147 6,456,622 Method for knowledge acquisition for diagnostic bayesian networks
148 6,446,027 Intelligent analysis system and method for fluid-filled electrical equipment
149 6,442,694 Fault isolation for communication networks for isolating the source of faults comprising attacks, failures, and other network propagating errors
150 6,440,667 Analysis of target molecules using an encoding system

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	PAT. NO.	Title
151	6,427,141	Enhancing knowledge discovery using multiple support vector machines
152	6,426,072	Compositions and methods for the therapy and diagnosis of lung cancer
153	6,418,424	Ergonomic man-machine interface incorporating adaptive pattern recognition based control system
154	6,415,276	Bayesian belief networks for industrial processes
155	6,408,107	Rapid convolution based large deformation image matching via landmark and volume imagery
156	6,405,108	Process and system for developing predictive diagnostics algorithms in a machine
157	6,403,320	Support bound probes and methods of analysis using the same
158	6,400,996	Adaptive pattern recognition based control system and method
159	6,394,952	Point of care diagnostic systems
160	6,385,474	Method and apparatus for high-resolution detection and characterization of medical pathologies
161	6,381,349	Projector/backprojector with slice-to-slice blurring for efficient 3D scatter modeling
162	6,379,895	Photolithographic and other means for manufacturing arrays
163	6,355,432	Products for detecting nucleic acids
164	6,338,152	Method and system for remotely managing communication of data used for predicting malfunctions in a plurality of machines
165	6,335,361	Method of treating benign forgetfulness
166	6,324,659	Method and system for identifying critical faults in machines
167	6,309,823	Arrays of nucleic acid probes for analyzing biotransformation genes and methods of using the same

168 6,295,525 Automatic invocation of computational resources without user intervention across a network
169 6,292,108 Modular, wireless damage monitoring system for structures
170 6,286,363 Integrated multi-element lubrication sensor and health lubricant assessment system
171 6,284,460 Hybridization and sequencing of nucleic acids using base pair mismatches
172 6,270,456 Computerized medical diagnostic system utilizing list-based processing
173 6,268,152 Probe kit for identifying a base in a nucleic acid
174 6,267,722 Point of care diagnostic systems
175 6,264,616 Acoustic tumor detection using stacked derived-band ABR amplitude
176 6,246,975 Computer architecture and process of patient generation, evolution, and simulation for computer based testing system
177 6,243,628 System and method for predicting impending failures in a locomotive
178 6,239,273 Printing molecular library arrays
179 6,236,870 Photonic molecular probe
180 6,221,592 Computer-based methods and systems for sequencing of individual nucleic acid molecules
181 6,219,626 Automated diagnostic system
182 6,212,502 Modeling and projecting emotion and personality from a computer user interface
183 6,196,057 Integrated multi-element lubrication sensor and lubricant health assessment
184 6,195,594 Real-time planner for design
185 6,185,534 Modeling emotion and personality in a computer user interface
186 6,157,921 Enhancing knowledge discovery using support vector machines in a distributed network environment
187 6,153,115 Monitor of plasma processes with multivariate statistical analysis of plasma emission spectra
188 6,128,608 Enhancing knowledge discovery using multiple support vector machines
189 6,095,982 Spectroscopic method and apparatus for optically detecting abnormal mammalian epithelial tissue
190 6,081,750 Ergonomic man-machine interface incorporating adaptive pattern recognition based control system
191 6,080,112 Acoustic tumor detection using stacked derived-band ABR amplitude
192 6,076,083 Diagnostic system utilizing a Bayesian network model having link weights updated experimentally
193 6,049,792 Automatic invocation of computational resources without user intervention across a network
194 6,041,182 Automatic invocation of computational resources without user intervention
195 6,027,880 Arrays of nucleic acid probes and methods of using the same for detecting cystic fibrosis
196 6,027,446 Pubic arch detection and interference assessment in transrectal ultrasound guided prostate cancer therapy
197 6,025,128 Prediction of prostate cancer progression by analysis of selected predictive parameters
198 6,024,705 Automated seismic detection of myocardial ischemia and related measurement of cardiac output parameters
199 5,989,811 Sextant core biopsy predictive mechanism for non-organ confined disease status
200 5,987,415 Modeling a user's emotion and personality in a computer user interface

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IEEE STD	IEEE Standard

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Breese, J.S.; Heckerman, D.;
Systems, Man and Cybernetics, Part A, IEEE Transactions on
Volume 26, Issue 6, Nov. 1996 Page(s):838 - 842
Digital Object Identifier 10.1109/3468.541343
AbstractPlus | References | Full Text: PDF(552 KB) IEEE JNL
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2. **Evidence-based Bayesian networks approach to airplane maintenance**
Kipersztok, O.; Dildy, G.A.;
Neural Networks, 2002. IJCNN '02. Proceedings of the 2002 International Joint Conference on
Volume 3, 12-17 May 2002 Page(s):2887 - 2891
Digital Object Identifier 10.1109/IJCNN.2002.1007607
AbstractPlus | Full Text: PDF(563 KB) IEEE CNF
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3. **A probability-based expert system for diagnosing pacemaker-related complications**
Chiang, C.J.; Bernstein, A.D.; Parsonnet, V.;
Computers in Cardiology 1994
25-28 Sept. 1994 Page(s):89 - 92
Digital Object Identifier 10.1109/CIC.1994.470242
AbstractPlus | Full Text: PDF(332 KB) IEEE CNF
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4. **Automatic Image Hanging Protocol for Chest Radiographs in PACS**
Luo, H.; Hao, W.; Foos, D.H.; Cornelius, C.W.;
Information Technology in Biomedicine, IEEE Transactions on
Volume 10, Issue 2, April 2006 Page(s):302 - 311
Digital Object Identifier 10.1109/TITB.2005.859872
AbstractPlus | Full Text: PDF(328 KB) IEEE JNL
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5. **Causal Reasoning Engine: An Explanation-Based Approach to Syndromic Surveillance**
Perry, B.B.; Van Allen, T.;
System Sciences, 2005. HICSS '05. Proceedings of the 38th Annual Hawaii International Conferen
03-06 Jan. 2005 Page(s):143b - 143b
Digital Object Identifier 10.1109/HICSS.2005.136
AbstractPlus | Full Text: PDF(176 KB) IEEE CNF
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1 Mini-buckets: A general scheme for bounded inference
Rina Dechter, Irina Rish
March 2003 **Journal of the ACM (JACM)**, Volume 50 Issue 2
Publisher: ACM Press
Full text available: pdf(902.27 KB) Additional Information: full citation, abstract, references, citings, index terms

This article presents a class of approximation algorithms that extend the idea of bounded-complexity inference, inspired by successful constraint propagation algorithms, to probabilistic inference and combinatorial optimization. The idea is to bound the dimensionality of dependencies created by inference algorithms. This yields a parameterized scheme, called *mini-buckets*, that offers adjustable trade-off between accuracy and efficiency. The mini-bucket approach to optimization problems, s ...

Keywords: Accuracy/complexity trade-off, Bayesian networks, approximation algorithms, combinatorial optimization, probabilistic inference.

2 Special issue on the fusion of domain knowledge with data for decision support: Combining knowledge from different sources in causal probabilistic models
Marek J. Druzdzel, Francisco J. Díez
December 2003 **The Journal of Machine Learning Research**, Volume 4
Publisher: MIT Press
Full text available: pdf(140.32 KB) Additional Information: full citation, abstract, references, index terms

Building probabilistic and decision-theoretic models requires a considerable knowledge engineering effort in which the most daunting task is obtaining the numerical parameters. Authors of Bayesian networks usually combine various sources of information, such as textbooks, statistical reports, databases, and expert judgement. In this paper, we demonstrate the risks of such a combination, even when this knowledge encompasses such seemingly population-independent characteristics as sensitivity and ...

3 Haskell ready to dazzle the real world
Martijn M. Schrage, Arjan van IJzendoorn, Linda C. van der Gaag
September 2005 **Proceedings of the 2005 ACM SIGPLAN workshop on Haskell Haskell '05**
Publisher: ACM Press
Full text available: pdf(194.30 KB) Additional Information: full citation, abstract, references, index terms

Haskell has proved itself to be a suitable implementation language for large software projects. Nevertheless, surprisingly few graphical end-user applications have been written in Haskell. Based on our experience with the development of the Bayesian network toolbox

Dazzle, we argue that the language is indeed very well suited for writing such applications. Popular language features, such as higher-order functions, laziness, and light syntax for data structures, turn out to hold their ground in a ...

Keywords: application, bayesian networks, graphical user interface, haskell, wxHaskell

4 Full Technical Papers: Evolution of user interaction: the case of agent adele

W. Lewis Johnson, Erin Shaw, Andrew Marshall, Catherine LaBore

January 2003 **Proceedings of the 8th international conference on Intelligent user interfaces**

Publisher: ACM Press

Full text available: pdf(391.75 KB) Additional Information: full citation, abstract, references, citings, index terms

Animated pedagogical agents offer promise as a means of making computer-aided learning more engaging and effective. To achieve this, an agent must be able to interact with the learner in a manner that appears believable, and that furthers the pedagogical goals of the learning environment. In this paper we describe how the user interaction model of one pedagogical agent evolved through an iterative process of design and user testing. The pedagogical agent Adele assists students as they assess and ...

Keywords: interface agents, proactive and agent-based paradigms, social intelligence, user studies

5 An impact analysis method for safety-critical user interface design

Julia Galliers, Alistair Sutcliffe, Shailey Minocha

December 1999 **ACM Transactions on Computer-Human Interaction (TOCHI)**, Volume 6 Issue 4

Publisher: ACM Press

Full text available: pdf(248.35 KB) Additional Information: full citation, abstract, references, citings, index terms, review

We describe a method of assessing the implications for human error on user interface design of safety-critical systems. In previous work we have proposed a taxonomy of influencing factors that contribute to error. In this article, components of the taxonomy are combined into a mathematical and causal model for error, represented as a Bayesian Belief Net (BBN). The BBN quantifies error influences arising from user knowledge, ability, and the task environ-ment, combined with factors describin ...

Keywords: Bayesian belief networks, human error, safety-critical, scenario-based casual analysis

6 Industry/government track posters: ANN quality diagnostic models for packaging manufacturing: an industrial data mining case study

Nicolás de Abajo, Alberto B. Diez, Vanesa Lobato, Sergio R. Cuesta

August 2004 **Proceedings of the tenth ACM SIGKDD international conference on Knowledge discovery and data mining KDD '04**

Publisher: ACM Press

Full text available: pdf(1.14 MB) Additional Information: full citation, abstract, references, index terms

World steel trade becomes more competitive every day and new high international quality standards and productivity levels can only be achieved by applying the latest computational technologies. Data driven analysis of complex processes is necessary in many industrial applications where analytical modeling is not possible. This paper presents the deployment of KDD technology in one real industrial problem: the development of new tinplate quality diagnostic models.The electrodeposition of tin on s ...

Keywords: ANNs, CRISP-DM, FMEA, tinplate quality

7 Probabilistic fault localization in communication systems using belief networks
Małgorzata Steinder, Adarshpal S. Sethi
October 2004 **IEEE/ACM Transactions on Networking (TON)**, Volume 12 Issue 5
Publisher: IEEE Press
Full text available: pdf(630.83 KB) Additional Information: full citation, abstract, references, index terms

We apply Bayesian reasoning techniques to perform fault localization in complex communication systems while using dynamic, ambiguous, uncertain, or incorrect information about the system structure and state. We introduce adaptations of two Bayesian reasoning techniques for polytrees, iterative belief updating, and iterative most probable explanation. We show that these approximate schemes can be applied to belief networks of arbitrary shape and overcome the inherent exponential complexity ass ...

Keywords: fault localization, probabilistic inference, root cause diagnosis

8 Switch directed dynamic causal networks—a paradigm for electronic system diagnosis
R. M. McDermott, D. Stern
October 1987 **Proceedings of the 24th ACM/IEEE conference on Design automation**
Publisher: ACM Press
Full text available: pdf(713.53 KB) Additional Information: full citation, abstract, references, index terms

Electronic Systems Diagnosis, be it at the Device, Board, or System level, is a complex and time consuming task. Various techniques have been developed to provide design aids to the maintenance technician, each with its own successes and limitations, typically in terms of performance versus complexity issues. This paper demonstrates a novel integration of such techniques to provide for an effective and efficient approach to expert diagnosis of complex systems. The integration of ...

9 On inclusion-driven learning of bayesian networks
Robert Castelo, Tomáas Kocka
December 2003 **The Journal of Machine Learning Research**, Volume 4
Publisher: MIT Press
Full text available: pdf(980.59 KB) Additional Information: full citation, abstract, references, index terms

Two or more Bayesian network structures are Markov equivalent when the corresponding acyclic digraphs encode the same set of conditional independencies. Therefore, the search space of Bayesian network structures may be organized in equivalence classes, where each of them represents a different set of conditional independencies. The collection of sets of conditional independencies obeys a partial order, the so-called "inclusion order." This paper discusses in depth the role that the inclusion ord ...

10 The design of an attorney's statistical consultant
L. S. Lutomski
May 1989 **Proceedings of the 2nd international conference on Artificial intelligence and law**
Publisher: ACM Press
Full text available: pdf(1.05 MB) Additional Information: full citation, references, index terms

11 Learning Hidden Variable Networks: The Information Bottleneck Approach
Gal Elidan, Nir Friedman
January 2005 **The Journal of Machine Learning Research**, Volume 6
Publisher: MIT Press
Full text available: pdf(744.77 KB) Additional Information: full citation, abstract

A central challenge in learning probabilistic graphical models is dealing with domains that

involve hidden variables. The common approach for learning model parameters in such domains is the *expectation maximization* (EM) algorithm. This algorithm, however, can easily get trapped in sub-optimal local maxima. Learning the model *structure* is even more challenging. The *structural EM* algorithm can adapt the structure in the presence of hidden variables, but usually performs poorl ...

12 Capturing, indexing, clustering, and retrieving system history

Ira Cohen, Steve Zhang, Moises Goldszmidt, Julie Symons, Terence Kelly, Armando Fox
October 2005 **ACM SIGOPS Operating Systems Review , Proceedings of the twentieth ACM symposium on Operating systems principles SOSP '05**, Volume 39 Issue 5
Publisher: ACM Press
Full text available: pdf(516.41 KB) Additional Information: full citation, abstract, references, index terms

We present a method for automatically extracting from a running system an indexable *signature* that distills the essential characteristic from a system state and that can be subjected to automated clustering and similarity-based retrieval to identify when an observed system state is similar to a previously-observed state. This allows operators to identify and quantify the frequency of recurrent problems, to leverage previous diagnostic efforts, and to establish whether problems seen at dif ...

Keywords: bayesian networks, clustering, information retrieval, performance objectives, signatures

13 System design methodologies: Any-time probabilistic switching model using bayesian networks

Shiva Shankar Ramani, Sanjukta Bhanja
August 2004 **Proceedings of the 2004 international symposium on Low power electronics and design**
Publisher: ACM Press
Full text available: pdf(72.41 KB) Additional Information: full citation, abstract, references, index terms

Modeling and estimation of switching activities remain to be important problems in low-power design and fault analysis. A probabilistic Bayesian Network based switching model can explicitly model *all* spatio-temporal dependency relationships in a combinational circuit, resulting in zero-error estimates. However, the space-time requirements of exact estimation schemes, based on this model, increase with circuit complexity [1, 2]. This paper explores a non-simulative, Importance Sampling bas ...

Keywords: bayesian networks, power estimation, probabilistic modeling

14 Simulation coverage and generation for verification: Coverage directed test generation for functional verification using bayesian networks

Shai Fine, Avi Ziv
June 2003 **Proceedings of the 40th conference on Design automation**
Publisher: ACM Press
Full text available: pdf(162.58 KB) Additional Information: full citation, abstract, references, citings, index terms

Functional verification is widely acknowledged as the bottleneck in the hardware design cycle. This paper addresses one of the main challenges of simulation based verification (or dynamic verification), by providing a new approach for *Coverage Directed Test Generation* (CDG). This approach is based on Bayesian networks and computer learning techniques. It provides an efficient way for closing a feedback loop from the coverage domain back to a generator that produces new stimuli to the test ...

Keywords: bayesian networks, coverage analysis, functional verification

15 Integrating logic, object-oriented and procedural paradigms in a fault diagnosis and monitoring system

Gerhard Fleischanderl, Gerhard Friedrich, Wolfgang Neijdl, Johannes Retti

June 1989 **Proceedings of the 2nd international conference on Industrial and engineering applications of artificial intelligence and expert systems - Volume 1 IEA/AIE '89**

Publisher: ACM Press

Full text available: pdf(589.12 KB) Additional Information: full citation, abstract, references, index terms

This paper describes ARTEX, a knowledge based system developed for quality assurance and fault localization in audio routing systems. Our system covers a large class of routing systems which may be flexibly configured. ARTEX uses an object-oriented model to represent the generic concepts and individual configurations. Fault localization strategies are realized by methods associated with objects and by heuristic rules focusing the diagnostic search.

16 On linear potential functions for approximating Bayesian computations

Eugene Santos

May 1996 **Journal of the ACM (JACM)**, Volume 43 Issue 3

Publisher: ACM Press

Full text available: pdf(1.95 MB) Additional Information: full citation, abstract, references, index terms, review

Probabilistic reasoning suffers from NP-hard implementations. In particular, the amount of probabilistic information necessary to the computations is often overwhelming. For example, the size of conditional probability tables in Bayesian networks has long been a limiting factor in the general use of these networks.We present a new approach for manipulating the probabilistic information given. This approach avoids being overwhelmed by essentially compressing the information using ...

Keywords: artificial intelligence, data compaction and compression, integer programming, least squares approximation, pattern recognition, probabilistic reasoning, uncertainty

17 Approximation algorithms for the vertex feedback set problem with applications to constraint satisfaction and Bayesian inference

Reuven Bar-Yehuda, Dan Geiger, Joseph (Seffi) Naor, Ron M. Roth

January 1994 **Proceedings of the fifth annual ACM-SIAM symposium on Discrete algorithms**

Publisher: Society for Industrial and Applied Mathematics

Full text available: pdf(1.24 MB) Additional Information: full citation, references, citings, index terms

18 Book review: Abduetive Inference Models for Diagnostic Problem Solving by Y. Peng and J. Reggia (Springer Verlag New York 1990)

Paul Thagard

November 1990 **ACM SIGART Bulletin**, Volume 2 Issue 1

Publisher: ACM Press

Full text available: pdf(543.24 KB) Additional Information: full citation, abstract, references

In the spring of 1990, the American Association for Artificial Intelligence sponsored a symposium on abductive inference, bringing together several dozen researchers (O'Rorke 1990). The term "abduction" as a form of inference originated with C.S. Peirce in the 1890s, and was introduced in artificial intelligence by Pople (1973). In recent years, it has found increasing use by researchers working on a diverse set of topics, particularly medical diagnosis, scientific discovery, and natural languag ...

19 The history of the use of computers in the interpretation of radiological images

G. S. Lodwick
December 1987 **Proceedings of ACM conference on History of medical informatics**
Publisher: ACM Press
Full text available: pdf(1.19 MB) Additional Information: full citation, references, index terms

20 Model Averaging for Prediction with Discrete Bayesian Networks
Denver Dash, Gregory F. Cooper
December 2004 **The Journal of Machine Learning Research**, Volume 5
Publisher: MIT Press
Full text available: pdf(267.17 KB) Additional Information: full citation, abstract

In this paper we consider the problem of performing Bayesian model-averaging over a class of discrete Bayesian network structures consistent with a partial ordering and with bounded in-degree *k*. We show that for *N* nodes this class contains in the worst-case at least <img align=middle src=dash04a-omega.jpeg alt="omega eq"> distinct network structures, and yet model averaging over these structures can be performed using <img align=middle src=dash04a-bigo.jpeg alt="bigo eq"&g ...

Results 1 - 20 of 200 Result page: **1** 2 3 4 5 6 7 8 9 10 next

Terms used **Bayesian** and **diagnostic** and **case** and **cause** Found **60,359** of **176,279**

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Results 21 - 40 of 200 Result page: previous 1 **2** 3 4 5 6 7 8 9 10 next
Best 200 shown Relevance scale

21 Emotionware
Lynellen D. S. Perry
September 1996 **Crossroads**, Volume 3 Issue 1
Publisher: ACM Press
Full text available: html(29.71 KB) Additional Information: full citation, index terms

22 Coding-based schemes for fault identification in communication networks
Chi-Chun Lo, Shing-Hong Chen, Bon-Yeh Lin
May 2000 **International Journal of Network Management**, Volume 10 Issue 3
Publisher: John Wiley & Sons, Inc.
Full text available: pdf(247.10 KB) Additional Information: full citation, abstract, references, index terms

This paper proposes two event correlation schemes for fault identification in communication networks. The causality graph model is used to describe the cause-and-effect relationships between network events. Copyright © 2000 John Wiley & Sons, Ltd.

23 Efficient reasoning
Russell Greiner, Christian Darken, N. Iwan Santoso
March 2001 **ACM Computing Surveys (CSUR)**, Volume 33 Issue 1
Publisher: ACM Press
Full text available: pdf(445.41 KB) Additional Information: full citation, abstract, references, citings, index terms, review

Many tasks require "reasoning"—i.e., deriving conclusions from a corpus of explicitly stored information—to solve their range of problems. An ideal reasoning system would produce all-and-only the correct answers to every possible query, produce answers that are as specific as possible, be expressive enough to permit any possible fact to be stored and any possible query to be asked, and be (time) efficient
Keywords: efficiency trade-offs, soundness/completeness/expressibility

24 Research track posters: Estimating the size of the telephone universe: a Bayesian Mark-recapture approach
David Poole
August 2004 **Proceedings of the tenth ACM SIGKDD international conference on Knowledge discovery and data mining KDD '04**
Publisher: ACM Press
Full text available: pdf(148.17 KB) Additional Information: full citation, abstract, references, index terms

Mark-recapture models have for many years been used to estimate the unknown sizes of

animal and bird populations. In this article we adapt a finite mixture mark-recapture model in order to estimate the number of active telephone lines in the USA. The idea is to use the calling patterns of lines that are observed on the long distance network to estimate the number of lines that do not appear on the network. We present a Bayesian approach and use Markov chain Monte Carlo methods to obtain inferenc ...

Keywords: Bayesian inference

25 Diagnosis, parsimony, and genetic algorithms

Walter D. Potter, B. E. Tonn, M. R. Hilliard, G. E. Liepins, S. L. Purucker, R. T. Goeltz
June 1990 **Proceedings of the 3rd international conference on Industrial and engineering applications of artificial intelligence and expert systems - Volume 1 IEA/AIE '90**
Publisher: ACM Press
Full text available: pdf(1.02 MB) Additional Information: full citation, abstract, references, citings, index terms

The Communication Alarm Processor Expert System (CAP), developed at Oak Ridge National Laboratory for the Bonneville Power Administration, is a near real-time system that aids microwave communication system operators with interpreting the cause of large communication system problems [Purucker89]. Problems in the communications network are indicated by the real-time arrival of alarms at the central control site. CAP receives and processes these alarms, then presents the operator with a sorte ...

26 Rx: treating bugs as allergies---a safe method to survive software failures

Feng Qin, Joseph Tucek, Jagadeesan Sundaresan, Yuanyuan Zhou
October 2005 **ACM SIGOPS Operating Systems Review , Proceedings of the twentieth ACM symposium on Operating systems principles SOSP '05**, Volume 39 Issue 5
Publisher: ACM Press
Full text available: pdf(245.29 KB) Additional Information: full citation, abstract, references, index terms

Many applications demand availability. Unfortunately, software failures greatly reduce system availability. Prior work on surviving software failures suffers from one or more of the following limitations: Required application restructuring, inability to address deterministic software bugs, unsafe speculation on program execution, and long recovery time.This paper proposes an innovative *safe* technique, called Rx, which can quickly recover programs from many types of software bugs, both det ...

Keywords: availability, bug, reliability, software failure

27 Joint classifier and feature optimization for cancer diagnosis using gene expression data

Balaji Krishnapuram, Lawrence Carin, Alexander J. Hartemink
April 2003 **Proceedings of the seventh annual international conference on Research in computational molecular biology RECOMB '03**
Publisher: ACM Press
Full text available: pdf(392.37 KB) Additional Information: full citation, abstract, references, index terms

Recent research has demonstrated quite convincingly that accurate cancer diagnosis can be achieved by constructing classifiers that are designed to compare the gene expression profile of a tissue of unknown cancer status to a database of stored expression profiles from tissues of known cancer status. This paper introduces the JCFO, a novel algorithm that uses a sparse Bayesian approach to jointly identify both the optimal nonlinear classifier for diagnosis and the optimal set of genes on which t ...

Keywords: JCFO, RVM, SVM, classication, disease diagnosis, feature selection, joint optimization, sparse bayesian methods

28 Artificial intelligence in medicine: a personal retrospective on its emergence and early function

C. A. Kulikowski

December 1987 **Proceedings of ACM conference on History of medical informatics**

Publisher: ACM Press

Full text available: pdf(862.11 KB) Additional Information: full citation, abstract, references, index terms

Methods of artificial intelligence were gradually introduced into clinical decision-making research from 1970 to 1974. Evolving from pattern recognition and general A.I. problem-solving ideas, such methods helped researchers crystallize the notions of knowledge-based systems by the mid-1970s. In 1978 the early systems gave way to either second-generation frameworks for general consultative reasoning or to new, more sophisticated knowledge representations. This paper traces some of the major ...

29 A belief management architecture for diagnostic problem solving

Serdar Uckun, Benoit M. Dawant, Gautam Biswas, Kazuhiko Kawamura

June 1990 **Proceedings of the 3rd international conference on Industrial and engineering applications of artificial intelligence and expert systems - Volume 1 IEA/AIE '90**

Publisher: ACM Press

Full text available: pdf(977.83 KB) Additional Information: full citation, abstract, references, index terms

An architecture for diagnosis that uses qualitative endorsements as its principal method of uncertainty abstraction and propagation is presented. The framework performs local belief computations in a hierarchical hypothesis space, in contrast with methods that propagate evidence throughout the whole frame of discernment. In this system, global control of the decision making process is maintained by local evaluations of belief status. These local evaluations determine an active focus in whic ...

30 Exploring knowledge acquisition tools for a veterinary medical expert system

M. McLeish

June 1988 **Proceedings of the 1st international conference on Industrial and engineering applications of artificial intelligence and expert systems - Volume 2 IEA/AIE '88**

Publisher: ACM Press

Full text available: pdf(679.12 KB) Additional Information: full citation, references, index terms

31 Learning belief networks from data: an information theory based approach

Jie Cheng, David A. Bell, Weiru Liu

January 1997 **Proceedings of the sixth international conference on Information and knowledge management**

Publisher: ACM Press

Full text available: pdf(1.00 MB) Additional Information: full citation, references, citings, index terms

32 A Bayesian approach to fault classification

Tein-Hsiang Lin, Kang G. Shin

April 1990 **ACM SIGMETRICS Performance Evaluation Review , Proceedings of the 1990 ACM SIGMETRICS conference on Measurement and modeling of computer systems SIGMETRICS '90**, Volume 18 Issue 1

Publisher: ACM Press

Full text available: pdf(876.67 KB) Additional Information: full citation, abstract, references, citings, index terms

According to their temporal behavior, faults in computer systems are classified into permanent, intermittent, and transient faults. Since it is impossible to identify the type of a fault upon its first detection, the common practice is to retry the failed instruction one or

more times and then use other fault recovery methods, such as rollback or restart, if the retry is not successful. To determine an "optimal" (in some sense) number of retries, we need to know several fault pa ...

33 The complexity of logic-based abduction

Thomas Eiter, Georg Gottlob
January 1995 **Journal of the ACM (JACM)**, Volume 42 Issue 1
Publisher: ACM Press
Full text available: pdf(3.02 MB) Additional Information: full citation, abstract, references, citings, index terms, review

Abduction is an important form of nonmonotonic reasoning allowing one to find explanations for certain symptoms or manifestations. When the application domain is described by a logical theory, we speak about logic-based abduction. Candidates for abductive explanations are usually subjected to minimality criteria such as subset-minimality, minimal cardinality, minimal weight, or minimality under prioritization of individual hypotheses. This paper presents a comprehensive com ...

Keywords: abduction, complexity analysis, diagnosis, propositional logic, reasoning

34 Induction of models under uncertainty

P Cheeseman
December 1986 **Proceedings of the ACM SIGART international symposium on Methodologies for intelligent systems**
Publisher: ACM Press
Full text available: pdf(977.45 KB) Additional Information: full citation, abstract, references, index terms

This paper outlines a procedure for performing induction under uncertainty. This procedure uses a probabilitic representation and uses Bayes' theorem to decide between alternative hypotheses (theories). This procedure is illustrated by a robot with no prior world experience performing induction on data it has gathered about the world. The particular inductive problem is the formation class descriptions both for the tutored and untutored cases. The resulting class definitions are inherenty p ...

35 Text analysis: "Expertness" from structured text?: RECONSIDER: a diagnostic prompting program

Mark S. Tuttle, David D. Sherertz, Marsden S. Blois, Stuart Nelson
February 1983 **Proceedings of the first conference on Applied natural language processing**
Publisher: Association for Computational Linguistics
Full text available: pdf(650.67 KB) Publisher Site Additional Information: full citation, abstract, references

RECONSIDER is an interactive diagnostic prompting program which uses simple information retrieval techniques to prompt a physician regarding possible diagnoses, given a list of positive patient findings. Its knowledge base consists of "structured text" definitions of 3262 diseases and a synonym dictionary Patient findings, and their synonyms, are matched against inverted files of terms from the disease descriptions, the number and selectivity of the patient findings matching terms in a gi ...

36 Task-structure analysis for knowledge modeling

B. Chandrasekaran, Todd R. Johnson, Jack W. Smith
September 1992 **Communications of the ACM**, Volume 35 Issue 9
Publisher: ACM Press
Full text available: pdf(2.77 MB) Additional Information: full citation, references, citings, index terms

Keywords: analysis, modeling

37 Evaluation of an inference network-based retrieval model

Howard Turtle, W. Bruce Croft
July 1991 **ACM Transactions on Information Systems (TOIS)**, Volume 9 Issue 3
Publisher: ACM Press

Full text available: pdf(2.40 MB) Additional Information: full citation, references, citings, index terms, review

Keywords: document retrieval, inference networks, network retrieval models

38 Learning with mixtures of trees

Marina Meila, Michael I. Jordan
September 2001 **The Journal of Machine Learning Research**, Volume 1
Publisher: MIT Press
Full text available: pdf(400.02 KB) Additional Information: full citation, abstract, citings

This paper describes the mixtures-of-trees model, a probabilistic model for discrete multidimensional domains. Mixtures-of-trees generalize the probabilistic trees of Chow and Liu (1968) in a different and complementary direction to that of Bayesian networks. We present efficient algorithms for learning mixtures-of-trees models in maximum likelihood and Bayesian frameworks. We also discuss additional efficiencies that can be obtained when data are "sparse," and we present data structures and alg ...

39 Decision-theoretic troubleshooting

David Heckerman, John S. Breese, Koos Rommelse
March 1995 **Communications of the ACM**, Volume 38 Issue 3
Publisher: ACM Press

Full text available: pdf(4.10 MB) Additional Information: full citation, abstract, references, citings, index terms, review

You have just finished typing that big report into your word processor. It is formatted correctly and looks beautiful on the screen. You hit print, go to the printer—and nothing is there. Your try again—still nothing. The report needs to go out today. What do you do?

40 Multi Relational Data Mining (MRDM): Probabilistic logic learning

Luc De Raedt, Kristian Kersting
July 2003 **ACM SIGKDD Explorations Newsletter**, Volume 5 Issue 1
Publisher: ACM Press
Full text available: pdf(1.98 MB) Additional Information: full citation, abstract, references, citings

The past few years have witnessed an significant interest in probabilistic logic learning, i.e. in research lying at the intersection of probabilistic reasoning, logical representations, and machine learning. A rich variety of different formalisms and learning techniques have been developed. This paper provides an introductory survey and overview of the state-of-the-art in probabilistic logic learning through the identification of a number of important probabilistic, logical and learning concept ...

Keywords: data mining, inductive logic programming, machine learning, multi-relational data mining, probabilistic reasoning, uncertainty

Terms used **Bayesian** and **diagnostic** and **case** and **cause** Found **60,359** of **176,279**

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41 Technique for automatically correcting words in text

Karen Kukich
December 1992 **ACM Computing Surveys (CSUR)**, Volume 24 Issue 4
Publisher: ACM Press
Full text available: pdf(6.23 MB) Additional Information: full citation, abstract, references, citings, index terms, review

Research aimed at correcting words in text has focused on three progressively more difficult problems:(1) nonword error detection; (2) isolated-word error correction; and (3) context-dependent work correction. In response to the first problem, efficient pattern-matching and n-gram analysis techniques have been developed for detecting strings that do not appear in a given word list. In response to the second problem, a variety of general and application-specific spelling cor ...

Keywords: n-gram analysis, Optical Character Recognition (OCR), context-dependent spelling correction, grammar checking, natural-language-processing models, neural net classifiers, spell checking, spelling error detection, spelling error patterns, statistical-language models, word recognition and correction

42 Understanding Bayesian reasoning via graphical displays

W. G. Cole
March 1989 **ACM SIGCHI Bulletin , Proceedings of the SIGCHI conference on Human factors in computing systems: Wings for the mind CHI '89**, Volume 20 Issue SI
Publisher: ACM Press
Full text available: pdf(631.90 KB) Additional Information: full citation, abstract, references, index terms

Bayesian reasoning, updating subjective probability in light of new information, is notoriously difficult. One factor that may contribute to this difficulty is lack of a mental model for how to combine the three key parameters in any Bayesian problem. An experiment was conducted contrasting four representations of Bayesian problems: three types of diagrams and a two by two contingency table. All four representations led to extremely good performance on a Bayesian task. This advantage also e ...

43 Propositional and relational Bayesian networks associated with imprecise and qualitative probabilistic assessments

Fabio Gagliardi Cozman, Cassio Polpo de Campos, Jaime Shinsuke Ide, José Carlos Ferreira da Rocha
July 2004 **Proceedings of the 20th conference on Uncertainty in artificial intelligence AUAI '04**
Publisher: AUAI Press
Full text available: pdf(340.75 KB) Additional Information: full citation, abstract, references

This paper investigates a representation language with flexibility inspired by probabilistic logic and compactness inspired by relational Bayesian networks. The goal is to handle propositional and first-order constructs together with precise, imprecise, indeterminate and qualitative probabilistic assessments. The paper shows how this can be achieved through the theory of credal networks. New exact and approximate inference algorithms based on multilinear programming and iterated/loopy propaga ...

44 The background of INTERNIST I and QMR

J. D. Myers
December 1987 **Proceedings of ACM conference on History of medical informatics**
Publisher: ACM Press
Full text available: pdf(368.45 KB) Additional Information: full citation, abstract, references, index terms

During my tenure as Chairman of the Department of Medicine at the University of Pittsburgh, 1955 to 1970, two points became clear in regard to diagnosis in internal medicine. The first was that the knowledge base in that field had become vastly too large for any single person to encompass it. The second point was that the busy practitioner, even though he knew the items of information pertinent to his patients correct diagnosis, often did not consider the right answer particularly if the di ...

45 Belief networks in construction simulation

Brenda McCabe
December 1998 **Proceedings of the 30th conference on Winter simulation**
Publisher: IEEE Computer Society Press
Full text available: pdf(104.82 KB) Additional Information: full citation, references, citings, index terms

46 Applications of machine learning and rule induction

Pat Langley, Herbert A. Simon
November 1995 **Communications of the ACM**, Volume 38 Issue 11
Publisher: ACM Press
Full text available: pdf(554.28 KB) Additional Information: full citation, abstract, references, citings, index terms, review

Machine learning is the study of computational methods for improving performance by mechanizing the acquisition of knowledge from experience. Expert performance requires much domain-specific knowledge, and knowledge engineering has produced hundreds of AI expert systems that are now used regularly in industry. Machine learning aims to provide increasing levels of automation in the knowledge engineering process, replacing much time-consuming human activity with automatic tec ...

47 New direction for uncertainty reasoning in deductive databases

U. Güntzer, W. Kießling, H. Thöne
April 1991 **ACM SIGMOD Record , Proceedings of the 1991 ACM SIGMOD international conference on Management of data SIGMOD '91**, Volume 20 Issue 2
Publisher: ACM Press
Full text available: pdf(923.93 KB) Additional Information: full citation, references, citings, index terms

48 Spatial decision support system for land assessment

Cláudio Chauke Nehme, Margareth Simões
November 1999 **Proceedings of the 7th ACM international symposium on Advances in geographic information systems**
Publisher: ACM Press
Full text available: pdf(117.01 KB) Additional Information: full citation, references, index terms

Keywords: GIS, agriculture planning, artificial intelligence, decision support system, expert system, geoinformatics, geoinformation system, land evaluation, land use planning

49 Applied probabilistic AI for online diagnosis of a safety-critical system based on a quality assurance program

Johannes Lauber, Christian Steger, Reinhold Weiss
February 1999 **Proceedings of the 1999 ACM symposium on Applied computing**
Publisher: ACM Press
Full text available: pdf(669.90 KB) Additional Information: full citation, references, index terms

Keywords: dynamic Bayesian network, high-assurance system, online diagnosis, probabilistic causal reasoning

50 Risks to the public: Risks to the public

Peter G. Neumann
May 2005 **ACM SIGSOFT Software Engineering Notes**, Volume 30 Issue 3
Publisher: ACM Press
Full text available: pdf(177.87 KB) Additional Information: full citation, abstract, index terms

Edited by Peter G. Neumann (Risks Forum Moderator and Chairman of the ACM Committee on Computers and Public Policy), plus personal contributions by others, as indicated. Opinions expressed are individual rather than organizational, and all of the usual disclaimers apply. We address problems relating to software, hardware, people, and other circumstances relating to computer systems. To economize on space, we include pointers to items in the online Risks Forum: (R i j) denotes RISKS vol i number ...

51 Conference abstracts

January 1977 **Proceedings of the 5th annual ACM computer science conference**
Publisher: ACM Press
Full text available: pdf(3.14 MB) Additional Information: full citation, abstract, index terms

One problem in computer program testing arises when errors are found and corrected after a portion of the tests have run properly. How can it be shown that a fix to one area of the code does not adversely affect the execution of another area? What is needed is a quantitative method for assuring that new program modifications do not introduce new errors into the code. This model considers the retest philosophy that every program instruction that could possibly be reached and tested from the ...

52 A Monte Carlo based simulation network model for a chronic progressive disease: the case of diabetic retinopathy

Joseph K. Canner, Yen-Pin Chiang, Jonathan C. Javitt
December 1992 **Proceedings of the 24th conference on Winter simulation**
Publisher: ACM Press
Full text available: pdf(880.37 KB) Additional Information: full citation, references, index terms

53 Industry/government track paper: An approach to spacecraft anomaly detection problem using kernel feature space

Ryohei Fujimaki, Takehisa Yairi, Kazuo Machida
August 2005 **Proceeding of the eleventh ACM SIGKDD international conference on Knowledge discovery in data mining KDD '05**
Publisher: ACM Press
Full text available: pdf(664.07 KB) Additional Information: full citation, abstract, references, index terms

Development of advanced anomaly detection and failure diagnosis technologies for spacecraft is a quite significant issue in the space industry, because the space environment is harsh, distant and uncertain. While several modern approaches based on qualitative reasoning, expert systems, and probabilistic reasoning have been developed recently for this purpose, any of them has a common difficulty in obtaining accurate and complete *a priori* knowledge on the space systems from human experts. ...

Keywords: anomaly detection, kernel feature space, principal component analysis, spacecraft, time series data, von Mises Fisher distribution

54 Inference networks for document retrieval

H. Turtle, W. B. Croft

December 1989 **Proceedings of the 13th annual international ACM SIGIR conference on Research and development in information retrieval**

Publisher: ACM Press

Full text available: pdf(1.65 MB) Additional Information: full citation, abstract, references, citings, index terms

The use of inference networks to support document retrieval is introduced. A network-based retrieval model is described and compared to conventional probabilistic and Boolean models.

55 On the conversion of rule bases into belief networks

Shijie Wang, Marco Valtorta

April 1992 **Proceedings of the 1992 ACM/SIGAPP Symposium on Applied computing: technological challenges of the 1990's**

Publisher: ACM Press

Full text available: pdf(697.06 KB) Additional Information: full citation, references, citings, index terms

56 PIC matrices: a computationally tractable class of probabilistic query operators

Warren R. Greiff, W. Bruce Croft, Howard Turtle

October 1999 **ACM Transactions on Information Systems (TOIS)**, Volume 17 Issue 4

Publisher: ACM Press

Full text available: pdf(239.43 KB) Additional Information: full citation, abstract, references, citings, index terms, review

The inference network model of information retrieval allows a probabilistic interpretation of query operators. In particular, Boolean query operators are conveniently modeled as link matrices of the Bayesian Network. Prior work has shown, however, that these operators do not perform as well as the pnorm operators used for modeling query operators in the context of the vector space model. This motivates the search for alternative probabilistic formulations for these operato ...

Keywords: Bayesian networks, Boolean queries, computational complexity, inference networks, link matrices, piecewise linear functions, pnorm, probabilistic information retrieval, query operators

57 The base-rate fallacy and the difficulty of intrusion detection

Stefan Axelsson

August 2000 **ACM Transactions on Information and System Security (TISSEC)**, Volume 3 Issue 3

Publisher: ACM Press

Full text available: pdf(124.41 KB) Additional Information: full citation, abstract, references, citings, index terms

Many different demands can be made of intrusion detection systems. An important requirement is that an intrusion detection system be effective; that is, it should detect a

substantial percentage of intrusions into the supervised system, while still keeping the false alarm rate at an acceptable level. This article demonstrates that, for a reasonable set of assumptions, the false alarm rate is the limiting factor for the performance of an intrusion detection system. This is d ...

Keywords: base-rate fallacy, detection rate, false alarm rate, intrusion detection

58 Inferring calendar event attendance

Elizabeth Mynatt, Joe Tullio

January 2001 **Proceedings of the 6th international conference on Intelligent user interfaces**

Publisher: ACM Press

Full text available: pdf(351.42 KB) Additional Information: full citation, abstract, references, citings, index terms

The digital personal calendar has long been established as an effective tool for supporting workgroup coordination. For the new class of ubiquitous computing applications, however, the calendar can also be seen as a sensor, providing both location and availability information to these applications. In most cases, however, the calendar represents a sequence of events that people could (or should) attend, not their actual daily activities. To assist in the accurate determination of user where ...

Keywords: bayesian networks, calendars, context-aware, groupware calendar systems, informal meeting scheduling, visualizing uncertainty

59 Cost/benefit based adaptive dialog: case study using empirical medical practice norms and intelligent split menus

Jim Warren

January 2001 **Australian Computer Science Communications , Proceedings of the 2nd Australasian conference on User interface AUIC '01**, Volume 23 Issue 5

Publisher: IEEE Computer Society , IEEE Computer Society Press

Full text available: pdf(843.80 KB) Publisher Site Additional Information: full citation, abstract, references, citings, index terms, review

The notion of an adaptive user interface, one that accommodates user needs based on knowledge of the task at hand, is compelling but difficult to make practical. This paper examines models of the utility (as balancing of cost and benefit) in the initiation of task-specific dialog based on conditional probability of user goals in context. Illustrations in this paper are based on an empirical model of General Practice (GP) medicine as derived from a large database of GP/patient encounters. Applica ...

60 A knowledge-based framework for belief change part I: foundations

Nir Friedman, Joseph Y. Halpern

March 1994 **Proceedings of the 5th conference on Theoretical aspects of reasoning about knowledge**

Publisher: Morgan Kaufmann Publishers Inc.

Full text available: pdf(2.03 MB) Additional Information: full citation, abstract, references

We propose a general framework in which to study belief change. We begin by defining belief in terms of knowledge and plausibility: an agent believes φ if he knows that φ is true in all the worlds he considers most plausible. We then consider some properties defining the interaction between knowledge and plausibility, and show how these properties affect the properties of belief. In particular, we show that by assuming two of the most natural properties, belief becomes a KD45 operator ...

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very similar situation is applicable to physicians facing a **diagnostic** ... It may happen that typical data from a rare **case cause** a high conflict value. ...
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that small variations in a numerical parameter **cause** ... individual posterior in each **diagnostic case** and how. it varies with noise, which is of most ...
www.pitt.edu/~druzdzel/psfiles/aime03.pdf - Similar pages

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Bayesian networks allow the structuring of complex information in a graphical network, where arrows depict the direction of causality, that is, from **cause** ...
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www.erim.org/cec/papers/drfactry.pdf - Similar pages

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Bayesian networks (or more generally, graphical models) provide an ...
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Diagnostic system utilizing a **Bayesian** network model having link ...
Diagnostic systems utilizing a **bayesian** network model having link weights updated ... An alternative to a rule based system is a "**case** based system". ...
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Method for knowledge acquisition for **diagnostic bayesian** networks ...
In **diagnostic Bayesian** networks for technical diagnosis the conditional ... In this **case**, the experts assess that in 40% of the cases, **Cause**.sub.1 is the ...
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The **diagnostic** process starts by identifying the abnormal findings provided by the input. ...
In that **case**, the finding is left without a **cause**. ...
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Nordic Informatics Network in the Agricultural Sciences
Reasoning under Uncertainty in Agriculture: **Bayesian** networks and Graphical ... The **diagnostic** problem in plant protection: In **case** of plant diseases, ...
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AHRQ WebM&M: **Case** & Commentary
In one study, the most common **cause** of chest or back pain was acute coronary syndrome, ... What led to the fatal **diagnostic** error in this **case**? ...
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Acute Coronary Syndrome is the most common **cause** of chest pain in the emergency ...
Medical Decision-Making Using **Bayesian** Approach. List all **diagnostic** ...
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[DOC] Evaluation of **Bayesian** Networks Used for Diagnostics
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In recent years, **diagnostic** assistants built around **Bayesian** Networks (BNs), ... In the latter **case**, the evaluation results can be used to identify the ...
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Decision Support System for Process Analysis and Supervision
Due to the existence of a number of first-level **diagnostic** tools, ... Figure 2: An example of a **Bayesian** Network for root **cause** analysis of process ...
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Evidence base of clinical diagnosis: Clinical problem solving and ...
From a **Bayesian** standpoint, these are all errors in assessing the **diagnostic** value of clinical evidence --- that is, errors in implicit likelihood ratios. ...
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... **case**, a deeper analysis of the sub-capabilities that contribute or **cause** ... A **bayesian diagnostic** algorithm for student modeling and its evaluation. ...
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[PS] A probabilistic approach to diagnosis Jon Williamson \Lambda in ...
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In this **case** one simply doesn't know what the most likely **cause** is. ... 2 Constrained **Bayesian** networks Of course, while a probabilistic approach may be ...
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cause of death in all age groups. It is also difficult to ... work in the area of using **Bayesian** Networks as a. **diagnostic** tool for PE has shown promise in ...
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Enhanced differential diagnosis of anticonvulsant hypersensitivity ...
We tested an integrated **Bayesian** and biochemical **diagnostic** approach. ... probability of a drug being the **cause** based on epidemiologic and **case** data. ...
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In the simple **case** of one **cause** and one effect, the causal power of the **cause** ... By contrast, in the **diagnostic** condition a common **cause** model is assumed; ...
www.mpib-berlin.mpg.de/en/institut/ DOK/full/martignon/wmbnmpota/wmbnmpota.html - 73k - Cached - Similar pages

[PS] Decision-Theoretic **Case**-Based Reasoning John S. Breese David ...
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2 **Bayesian**-Network Structure We have developed a stylized **Bayesian** network for **case**-based **diagnostic** applications. The basic organizing structure consists ...
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